

hyaluronic acid derivative selected from the group consisting of:

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- A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series;
 - B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain;
 - C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series;
 - D) an O-, an N-sulphated hyaluronic acid and a derivative thereof,
said autologous or homologous cellular line is cultivated in presence of a medium treated with autologous or homologous fibroblasts or in a coculture with fibroblasts.

163. (new) The biological material according to claim 162, further containing keratinocytes, collagen and/or fibrin.

164. (new) The biological material according to claim 162, wherein said endothelial cells are isolated from the umbilical vein from dermis or other tissue wherein blood vessels are present.

165. (new) The biological material according to claim 162 wherein the glandular cells are liver or Langerhans' islet cells.

166. (new) The biological material according to claim 162 wherein the skin adnexa are sebaceous glands, sweat glands or hair bulbs

and the germinative cells are isolated from autologous or homologous hair bulbs.

167. (new) The biological material according to claim 162, wherein the hyaluronic acid ester is a benzyl ester with a degree of esterification of between 25 and 100%.

168. (new) The biological material according to claim 162 , wherein component (b) is in the form of a non woven fabric, sponges, granules, gauzes, microspheres guide-channels or combination with one another.

169. (new) The biological material according to claim 168 wherein component (b) is in the form of a non woven fabric.

170. (new) A process for preparing a biological material according to claim 162 comprising the following steps:

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- i) Isolating at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,
 - ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
 - iii) seeding said cellular line on said matrix in the presence of autologous human fibroblasts or in a co-culture with autologous or homologous human fibroblasts.

171. (new) The process according to claim 170 wherein, when in step (i) the cellular line is selected from the group consisting of autologous or homologous skin adnexa and germinative cells of hair bulbs, the same in step (iii) are optionally seeded in association with autologous or homologous keratinocytes.

172. (new) A process for the preparation of the biological material according to claim 162 comprising the following steps:

- i) isolating endothelial cells from human umbilical vein by enzymatic digestion with collagenase;
- ii) amplifying said cells on collagen treated dishes,
- iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
- iv) seeding said endothelial cells in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and germinative cells of hair bulb and optionally in the presence of a medium treated with human autologous or homologous fibroblasts in primary culture or in a coculture with human autologous or homologous fibroblasts.

173. (new) The biological material according to claim 162, for use in human and veterinary surgery.

174. (new) The biological material according to claim 162 wherein component (a) comprises skin adnexa optionally in association with keratinocytes for use in skin transplants .

175. (new) The biological material according to claim 174 wherein component (a) further comprises autologous or homologous endothelial cells facilitating the mechanism of neovascularization of the transplanted skin.

176. (new) The biological material according to claim 162 wherein component (a) comprises germinative cells of hair bulbs for use in scalp transplants.

177. (new) The biological material according to claim 162, wherein component (a) comprises islets of Langerhans for use in case of insufficient insulin production.

178. (new) The biological material according to claim 162, wherein component (a) comprises endothelial cells for use in surgery.

179. (new) The biological material according to claim 178, for use in cardiovascular, aesthetic and oncological surgery.

180. (new) The biological material according to claim 179 for use in surgery to enhance the biological process of tissue vascularisation.

181. (new) A biological material according to claim 162, wherein (a) is an autologous cellular line as support for gene transfection.

182. (new) The biological material according to claim 162, wherein (a) is an autologous cellular line for use in gene transfection.

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183. (new) An in vitro biological material comprising:

a) at least one cellular line selected from the group consisting of endothelial cells , glandular cells, skin adnexa and germinative cells of hair bulbs,

b) a biocompatible three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:

A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic , arylaliphatic, cycloaliphatic series,

B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain,

C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups esterified with an alcohol of aliphatic, aromatic , arylaliphatic, cycloaliphatic series,

D) an O-, an N-sulphated hyaluronic acid and a derivative thereof,
said cellular line being cultivated in presence of a medium treated with fibroblasts or in a coculture with fibroblasts.

184. (new) The biological material according to claim 183, further containing keratinocytes, collagen and/or fibrin.

185. (new) The biological material according to claim 183, wherein said endothelial cells are isolated from the umbilical vein from dermis or other tissue wherein blood vessels are present.

186. (new) The biological material according to claim 183, wherein the glandular cells are liver or Langerhans' islet cells.

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187. (new) The biological material according to claim 183, wherein the skin adnexa are sebaceous glands, sweat glands or hair bulbs and germinative cells are isolated from autologous, homologous, heterologous hair bulbs.

188. (new) The biological material according to claim 183, wherein the hyaluronic acid ester is a benzyl ester with a degree of esterification of between 25 and 100%.

189. (new) The biological material according to claim 183, wherein component (b) is in the form of a non woven fabric , sponges, granules, gauzes, microspheres , guide channels or combination with one another.

190. (new) The biological material according to claim 183 wherein component (b) is in the form of a non woven fabric.

191. (new) A process for preparing the biological material according to claim 183 comprising the following steps:

i) isolating at least one cellular line selected from the group

- consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,
- ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
 - iii) seeding said cellular line on said matrix in the presence of human fibroblasts or in a co-culture with human fibroblasts.

192. (new) The process according to claim 191 wherein when in step (i) the cellular line is selected from the group consisting of skin adnexa and germinative cells of hair bulbs in step (iii) the same is optionally seeded in association with keratinocytes.

193. (new) A process for preparing the biological material according to claim 183 comprising:

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- i) isolating endothelial cells from human umbilical vein by enzymatic digestion with collagenase;
 - ii) amplifying said cells on collagen treated dishes,
 - iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen,
 - iv) seeding said endothelial cells optionally in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and germinative cells of hair bulb and in the presence of a medium treated with human fibroblasts in primary culture or in a coculture with human fibroblasts.

194. (new) The biological material according to claim 183 for the screening of medicaments or toxic substances.

195. (new) A biological material comprising:

- a) at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,

b) a biocompatible three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:

A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series;

B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain;

C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series.

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196. (new) A biological material comprising:

a) at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,

b) a biocompatible three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series,

said cellular line being cultivated in presence of a medium treated with fibroblasts or in a coculture with fibroblasts.

197. (new) A biological material comprising:

a) autologous or homologous cells belonging to at least one cell type selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,

b) a biocompatible three-dimensional matrix, on which said cells are seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:

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- A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series;
 - B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain;
 - C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series;
 - D) an O-, an N-sulphated hyaluronic acid and a derivative thereof

said cellular line being cultivated in presence of a medium treated with fibroblasts or in a coculture with fibroblasts.

198. (new) A biological material comprising:

- a) autologous or homologous cells belonging to at least one cell type selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,
- b) a biocompatible three-dimensional matrix, on which said cells are seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:
 - A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series;
 - B) an autocrosslinked ester of hyaluronic acid wherein part or

all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain;

- C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series,

said cellular line being cultivated in presence of a medium treated with fibroblasts or in a coculture with fibroblasts.

199. (new) A biological material comprising:

- a) autologous or homologous cells belonging to at least one cell type selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,
- b) a biocompatible three-dimensional matrix, on which said cells are seeded and grown, said matrix comprising an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic series

said cellular line being cultivated in presence of a medium treated with fibroblasts or in a coculture with fibroblasts.

REMARKS

In response to the objections and rejections of the claims, the applicant has canceled to pending claims and has added a new set of claims. The new claims have been carefully